

SECTION 646 - GEOCOMPOSITE DRAIN

646.01 Description. This work includes furnishing and placing geocomposites to the lines, grades and dimensions according to the contract.

646.02 Materials.

(A) **Geocomposite Drain.** Geocomposite drain shall pass water while retaining soil without clogging. One side of the geocomposite drain material shall be impermeable. The geocomposite drain material shall be resistant to chemical attack, mildew and rot. The material shall conform to the following minimum average roll value (MARV) for every test property listed below:

Property	Test Procedure	Requirements
Fabric Properties:		
Tensile Strength, either direction, (lbs) (minimum)	ASTM D 4632	110
Elongation, either direction (%) (maximum)	ASTM D 4632	70
Puncture Resistance (lbs) (minimum)	ASTM D 4833	70
¹ Apparent Opening Size (US Standard Sieve)	ASTM D 4751	70 - 120
Core Properties:		
Compressive Strength (psi) (minimum)	ASTM D 1621	40
Flow Rate at 14.5 psi, gradient 1.0 (gal/min/ft) (minimum)	ASTM D 4716	15
¹ Apparent Opening Size (AOS) requirement may be adjusted by the Engineer when less than 50 % of soil particles by weight passes US No. 200 sieve or when permeability (ASTM D 4491) of the geotextile is equal to or less than permeability of the soil.		

646.02

The Contractor shall furnish certified test reports with each shipment of materials attesting that the geocomposite material conforms to the contract.

(B) **Perforated Pipe.** Perforated pipe shall conform to the following:

Plastic Pipe 706.12

Corrugated Metal Pipe for Underdrains 707.04

The Contractor shall have the option of installing either type of pipe listed above. The Contractor shall not mix the types of pipe within the ends of the installation.

(C) **Nonperforated Pipe.** Nonperforated pipe shall conform to perforated pipe except that the provisions for perforation shall not apply.

(D) **Structural Backfill.** Structural backfill material "A" shall conform to Subsection 703.20 - Structure Backfill Material.

646.03 Construction Requirements.

(A) **Packaging and Storing.** The Contractor shall furnish geocomposite rolls with suitable wrapping for protection against moisture and ultraviolet exposure before placement. The Contractor shall identify, store, and handle each roll according to ASTM D 4873. If stored outdoors, the Contractor shall also elevate and protect them with waterproof cover.

(B) **Geocomposite Material Exposure Following Placement.** Exposure of geocomposite drain material to the elements between laydown and cover shall be a maximum of five (5) days to minimize damage potential and deterioration.

(C) **Site Preparation.** Before placing geocomposite material, the Contractor shall clear the ground site of sharp objects, cobbles, boulders and vegetation. The Contractor shall excavate the rock protruding surfaces to neat lines. The Contractor shall backfill voids and over excavations with structure backfill material "A" as required to produce neat lines. The contract defines structure backfill material "A" according to Subsection 703.20 - Structure Backfill Material.

(D) **Installation.**

(1) When placing geocomposite drain on slopes, the Contractor shall unroll and place the geocomposite material on the prepared surface with the permeable fabric face against the subgrade. The Contractor shall not drag the geocomposite material on the ground.

(2) If placing geocomposite drain on walls, the Contractor shall provide mastic or other accepted material. The Contractor shall use hand operated compaction equipment no closer than one (1) foot away from the geocomposite drain material.

(3) At geocomposite drain joints, the Contractor shall peel back the fabric from the core material and provide a minimum fabric overlap of three (3) inches. At the ends of the drainage panel, the Contractor shall provide a three (3) inch lap over the edge of the core material. To connect the perforated pipe, the Contractor shall peel back fabric from the core a sufficient distance to encircle the perforated pipe between the fabric and core materials with a minimum of three (3) inch fabric lap over the core material.

(4) The Contractor shall place the perforated pipe with the perforations down. The Contractor shall join the pipe sections securely with appropriate couplings and/or bands.

(E) **Damage Repair.** The Contractor shall remove and replace torn, punctured, or damaged geocomposite material areas with undamaged geocomposite material at no cost to the State. The Contractor shall make repair observing the minimum overlap requirements specified above.

646.04 Method of Measurement. The Engineer will measure the geocomposite material by the square yard.

The Engineer will measure perforated pipe by the linear feet.

646.05 Basis of Payment. The Engineer will pay for the accepted quantities of geocomposite material by the contract unit price per square yard in place. The price shall be full compensation for overlapping the joints and ends of the panel and furnishing labors, materials, equipment, tools, and incidentals necessary to complete the work.

The Engineer will pay for the accepted quantities of perforated pipe by the contract unit price per linear feet in place. The price shall be full compensation for installing pipe joint coupling and /or band and furnishing labors, materials, equipment, tools, and incidentals necessary to complete the work.

The Engineer will make payment under:

Pay Item	Pay Unit
Geocomposite Drain	Square Yard
____-Inch Perforated Drain Pipe	Linear Feet

646.05

The Engineer will pay for excavating and backfilling under Section 206 - |
Excavation and Backfill for Conduits and Structures. |

SECTION 647 - (UNASSIGNED)